



Oski and the Energy Crystals

Problem Statement

Oski is exploring an ancient cave system containing N energy crystals arranged in a single row from left to right, numbered 1 to N . Each crystal i has an intrinsic power level P_i .

Oski carries a special charging device and wants to collect power from a **non-empty continuous subarray** of crystals $[l, r]$ ($1 \leq l \leq r \leq N$).

When Oski processes a chosen subarray $P[l \dots r]$, his charging device performs a sequence of operations starting from index l up to index r . The device maintains a running total power, initially 0:

1. Upon encountering crystal i , Oski adds its power P_i to the running total.
2. If the running total becomes **strictly negative** at any point, the device's automatic safety fuse triggers instantly: the running total is reset to 0, and an **overload penalty** of C energy units is permanently deducted from Oski's final score.

Oski wants to choose a single continuous subarray $[l, r]$ to maximize his **net score**, defined as:

$$\text{Net Score} = (\text{Final Running Total at index } r) - (\text{Total Overload Penalties incurred during } [l, r])$$

Help Oski find the maximum possible net score he can achieve.

Input Format

- The first line contains two integers N and C ($1 \leq N \leq 2 \cdot 10^5$, $0 \leq C \leq 10^9$) — the number of crystals and the overload penalty cost.
- The second line contains N integers $P_1, P_2, \dots, P_N$ ($-10^9 \leq P_i \leq 10^9$) — the power levels of the crystals.

Output Format

Print a single integer — the maximum net score Oski can achieve by selecting an optimal subarray $[l, r]$.

Sample Input 1

```
5 10
3 -5 4 -2 6
```

Sample Output 1

```
8
```

Explanation of Sample 1

If Oski chooses the subarray from index 1 to 5 ($[3, -5, 4, -2, 6]$):

- $i = 1$: Total = 3.
- $i = 2$: Total = $3 + (-5) = -2 < 0 \rightarrow$ Safety fuse triggers! Total resets to 0, penalty paid = 10.
- $i = 3$: Total = $0 + 4 = 4$.
- $i = 4$: Total = $4 + (-2) = 2$.
- $i = 5$: Total = $2 + 6 = 8$.

End total = 8, Total penalty = 10 $\rightarrow$ Net Score = $8 - 10 = -2$.

However, if Oski chooses the subarray from index 3 to 5 ($[4, -2, 6]$):

- $i = 3$: Total = 4.
- $i = 4$: Total = $4 + (-2) = 2$.
- $i = 5$: Total = $2 + 6 = 8$.

No safety fuse triggered! End total = 8, Penalty = 0 $\rightarrow$ Net Score = $8 - 0 = 8$.

Sample Input 2

```
4 5
-10 -20 -30 -40
```

Sample Output 2

```
-5
```

Explanation of Sample 2

Oski chooses subarray $[1, 1]$ ($[-10]$):

- $i = 1$: Total = $-10 < 0 \rightarrow$ Safety fuse triggers! Total resets to 0, penalty paid = 5.
- Final Total = 0, Penalty = 5 $\rightarrow$ Net Score = $0 - 5 = -5$.